VALIDATA

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DATA VALIDATION SUMMARY
REPORT

COMPANY:	URS Corporation
SITE NAME:	SSFL - Chemical Soil Background Study
CONTRACTED LAB:	Columbia Analytical Services, Inc. – Kelso, Washington
PROJECT NUMBER:	29403634
QA/QC LEVEL:	Level IV
EPA SOW/METHOD:	EPA SW-846
VALIDATION GUIDELINES:	*USEPA Contract Laboratory Program National Functional Guidelines for Organic Superfund Data Review,* 2008*, USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review,* 2010
SAMPLE MATRICES:	Soil & Water
TYPES OF ANALYSES:	Formaldehyde (Form.), Perchlorate, Metals, Hexavalent Chromium (Hex. Cr), Fluoride, Nitrite, Nitrate+Nitrite, Nitrate, Cyanide (CN)
SDG NUMBER:	K1110227

OVERVIEW

SAMPLES:

Client Sample #	Lab Sample #	Matrix	Form.	Perchlorate	Metals	Hex Cr
CZBS0054S005	K1110227-001	Soil	X	X	X	X
CZBS0054S005MS	K1110227-001MS	Soil	X			
CZBS0054S005MSD	K1110227-001MSD	Soil	X			

Client Sample #	Lab Sample #	Matrix	Fluoride.	Nitrite	Nitrate + Nitrite	Nitrate
CZBS0054S005	K1110227-001	Soil	X	X	X	X
CZBS0054S005MD	K1110227-001MD	Soil		X	X	
CZNS0054S005MS	K1110227-001MS	Soil			X	

Client Sample #	Lab Sample #	Matrix	Cyanide
CZBS0054S005	K1110227-001	Soil	X

*All metals were analyzed by ICP, ICP-MS, and CVAA (Mercury)

SUFFIX CODES: D = FIELD DUPLICATE, DL = DILUTION, MD = MATRIX DUPLICATE, MS = MATRIX SPIKE, MSD = MATRIX SPIKE DUPLICATE
RE = REANALYSIS

DATA REVIEWERS: Amy L. Hogan, Kevin C. Harmon, Diana Levy

RELEASE SIGNATURE: Digitally signed by: Diana Levy
Date: 2012.03.28

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Data Qualifier Definitions

J	-	The associated numerical value is an estimated quantity.
J+	-	The associated numerical value is an estimated quantity, potentially biased high.
J-	-	The associated numerical value is an estimated quantity, potentially biased low.
R	-	The data are unusable (the compound/analyte may or may not be present). Resampling and reanalysis are necessary for verification.
U	-	The compound/analyte was analyzed for, but not detected. The associated numerical value is the sample quantitation limit.
UJ	-	The compound/analyte was analyzed for, but not detected. The sample quantitation limit is an estimated quantity.

Protocol Qualifier Classification: The data point was outside the analytical method, data validation guidelines or project specific limits.

Advisory Qualifier Classification: The data point was qualified based on professional judgement of the validator.

Note: All qualifiers applied to the data in all analytical fractions are considered Protocol Qualifier Classification unless specifically noted as Advisory.

REASON CODE DEFINITIONS
URS Santa Susana Field Laboratory

a Analytical sequence deficiency or omission.
b Gross compound breakdown (4,4'-DDT/Endrin).
c Calibration failure; poor or unstable response.
d Laboratory duplicate imprecision.
e Laboratory duplicate control sample imprecision.
f Field duplicate imprecision.
g Poor chromatography.
h Holding time violation.
i Internal standard failure.
j Poor mass spectrographic performance.
k Serial dilution imprecision.
l Laboratory control sample recovery failure.
m Matrix spike/matrix spike duplicate recovery failure.
n Interference check sample recovery failure.
o Calibration blank contamination (metals/inorganics only).
p Preparation blank contamination (metals/inorganics only).
q Quantitation outside linear range.
r Linearity failure in initial calibration.
s Surrogate spike recovery failure
(GC organics and GC/MS organics only).
t Instrument tuning failure.
u No valid confirmation column (GC Organics only).
v Value is estimated below the MDA (Rads only).
w Retention time (RT) outside of RT window.
x Field blank contamination.
y Trip blank contamination.
z Method blank contamination.

DATA QUALIFICATION SUMMARY

Columbia Analytical Services, Inc. – K1110227 - Organics & Inorganics

SAMPLES: CZBS0054S005

FORMALDEHYDE

SUMMARY

I.) General:

The analyses for Formaldehyde were performed using GC according to SW-846 Method 8315A.

All laboratory data were acceptable without qualification.

MAJOR ISSUES

There were no Major Problems with this fraction of the SDG.

MINOR ISSUES

I.) Holding Times:

All Holding Time criteria were met. No action was required.

II.) Instrument Performance:

All Instrument Performance criteria were met. No action was required.

III.) Calibration:

Initial Calibration:

All Initial Calibration criteria were met. No action was required.

Continuing Calibration:

All Continuing Calibration criteria were met. No action was required.

IV.) Blanks:

Method Blanks:

There were no detections in the method blank associated with this fraction of the SDG. No action was required.

V.) Surrogate Recoveries:

The addition of Surrogate Compounds was not utilized by the laboratory for this fraction of the SDG. Since the method for this analysis does not specify that Surrogate compounds are required, the validator determined that data qualification was not necessary.

VI.) Laboratory Control Samples (LCS):

LCS:

One LCS was analyzed for this fraction of the SDG. All LCS criteria were met. No action was required.

Reporting Limit LCS (RL LCS):

An RL LCS was not submitted for this fraction of the SDG. No action was required.

VII.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analyses were performed on SDG sample CZBS0054S005. All criteria were met. No action was required.

VIII.) Field Duplicates:

There were no field duplicate samples identified for this fraction of the SDG. No action was required.

IX.) TCL Compound Identification:

All Compound Identification criteria were met. No action was required.

PERCHLORATE

SUMMARY

I.) General:

The analyses for Perchlorate were performed using HPLC/MS/MS according to SW-846 Method 6850.

All laboratory data were acceptable without qualification.

MAJOR ISSUES

There were no Major Problems with this fraction of the SDG.

MINOR ISSUES

I.) Holding Times:

All Holding Time criteria were met. No action was required.

II.) Instrument Performance:

All Instrument Performance criteria were met. No action was required.

III.) Calibration:

Initial Calibration:

All Initial Calibration criteria were met. No action was required.

Continuing Calibration:

All Continuing Calibration criteria were met. No action was required.

IV.) Blanks:

Method Blanks:

There were no detections in the method blank associated with this fraction of the SDG. No action was required.

VI.) Laboratory Control Samples (LCS):

LCS:

One LCS / LCSD set was analyzed by the laboratory for this SDG. All LCS criteria were met. No action was required.

Reporting Limit LCS (RL LCS):

An RL LCS was not submitted for this fraction of the SDG. No action was required.

VII.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analyses were not submitted for this fraction of the SDG. Data qualification based on the absence of MS / MSD data was not required, so no action was taken.

VIII.) Internal Standards Performance:

All ISTD criteria were met. No action was required.

VIII.) Field Duplicates:

There were no field duplicate samples identified for this fraction of the SDG. No action was required.

IX.) TCL Compound Identification:

All Compound Identification criteria were met. No action was required.

TOTAL METALS

SUMMARY

I.) General:

Aluminum, barium, boron, calcium, lithium, magnesium, manganese, phosphorus, potassium, sodium, strontium, tin, titanium, and zinc were analyzed by Inductively Coupled Plasma (ICP) according EPA method 6010B. Antimony, arsenic, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel, selenium, silver, thallium, vanadium, and zirconium were analyzed by ICP-Mass Spectrometry (ICP-MS) according to EPA method 6020. Mercury was analyzed by cold vapor atomic absorption (CVAA) according to EPA method 7470A for aqueous samples and 7471A for soil samples.

Matrix Spike/Matrix Spike duplicate, Duplicate, and Serial Dilution results were taken from separate client SDGs.

All laboratory data were acceptable with qualification.

MAJOR ISSUES:

There were no Major Issues with this fraction of the SDG.

MINOR ISSUES:

I.) Holding Times and Preservation:

All Holding Time and preservation criteria were met. No action was required.

II.) Calibration:

All Initial and Continuing Calibration criteria were met. No action was required.

III.) Blanks:

Preparation Blanks:

The following detections were reported for the preparation blank associated with the SDG soil samples:

Blank	Matrix	Analyte	Result
K1110227MB	Soil	aluminum	0.70 mg/kg
		antimony	0.013 mg/kg
		barium	0.08 mg/kg
		cadmium	0.009 mg/kg
		calcium	2.4 mg/kg
		chromium	0.08 mg/kg
		cobalt	0.010 mg/kg
		lead	0.022 mg/kg
		manganese	0.04 mg/kg
		molybdenum	0.03 mg/kg
		nickel	0.06 mg/kg
		thallium	0.017 mg/kg

All detected soil sample results were greater than the CRQL and 10X the blank contamination,

so no action was required.

Calibration Blanks:

The following detections were the highest reported values for the calibration blanks associated with the SDG soil samples:

Blank	Analyte	Result
ICB	barium	0.90 ug/L
	molybdenum	0.04 ug/L
CCB2	aluminum	-3.4 ug/L
	antimony	-0.097 ug/L
	cobalt	0.009 ug/L
	lead	0.014 ug/L
	mercury	-0.16 ug/L
	nickel	0.06 ug/L
	strontium	0.10 ug/L
	thallium	0.011 ug/L
CCB3	calcium	10.3 ug/L
	manganese	-0.20 ug/L
CCB4	boron	3.0 ug/L

The result for boron in the SDG sample, which was less than the CRQL, was flagged as undetected (U) with the results being raised to the CRQL.

The positive result for mercury in the SDG sample was flagged as estimated biased low (J-) since the sample result was less than 10X the CRQL and the negative blank value.

All detected sample results in the remaining analytes were greater than 5X the blank contamination, so no further action was required.

IV.) Interference Check Standards:

The following non-spiked analytes were detected in the ICSA or ICSAB samples at levels above the method detection limit (MDL) for the soil analytes:

Analyte	MDL	Result
antimony	0.018 ug/L	0.2 ug/L
barium	0.3 ug/L	2.0 ug/L
boron	2.0 ug/L	3.0 ug/L
cadmium	0.008 ug/L	0.1 ug/L
chromium	0.03 ug/L	0.04 ug/L
cobalt	0.002 ug/L	0.7 ug/L

Analyte	MDL	Result
copper	0.16 ug/L	0.6 ug/L
lead	0.01 ug/L	0.1 ug/L
lithium	2.5 ug/L	10 ug/L
manganese	0.1 ug/L	-3.0 ug/L
molybdenum	0.04 ug/L	49.2 ug/L
nickel	0.04 ug/L	2.7 ug/L
phosphorus	15.0 ug/L	90 ug/L
selenium	0.4 ug/L	1.2 ug/L
sodium	20 ug/L	49 ug/L
titanium	0.3 ug/L	2.0 ug/L
vanadium	0.04 ug/L	-0.1 ug/L
zirconium	0.04 ug/L	0.1 ug/L

All sample results were >10X the analyte MDL and significantly greater than the ICS results, so no action was taken.

The ICSAB recovery criteria were met for soil analyses. No action was required.

V.) Laboratory Control Samples (LCS):

All LCS Recovery and LCSD duplicate precision criteria were met. No action was necessary. All aqueous LCS Recovery criteria were met. No action was necessary.

Reporting Limit LCS (RL LCS):

The RL LCS had detected results for all target analytes in this fraction, and was therefore acceptable. No action was required.

VI.) Duplicate Sample Analysis:

MD analyses were performed on client samples from separate client SDGs. All duplicate criteria were met and no action was taken.

VII.) Matrix Spike / Matrix Spike Duplicate (MS/MSD):

MS / MSD analyses were performed on client samples from separate client SDGs. The following %R's were outside the 75-125% QC limits.

MS/MSD Sample	Analyte	%R
CZBS0045S055MS	antimony	29.8
CZBS0045S055MSD	antimony	27.5
CZBS0045S055MSD	manganese	57.7

All Post spike criteria were. The positive and non-detect results for antimony and manganese in the SDG samples were flagged as estimated (J) and (UJ).

VIII.) Serial Dilution:

All ICP serial dilution criteria were met, so no action was taken.

X.) Field Duplicates:

There were no field duplicates associated with this SDG. No action was required.

XI.) Instrument QC data:

Instrument verification (ICP-MS Tune) test criteria were met. No action was required.

Method 6020 suggests but does not require that every analyte have an internal standard that is within 50 atomic mass units (amu) from the quantitation isotope amu. Several of the analytes of interest for the ICP-MS had associated Internal Standards with an amu difference of greater than 50. The laboratory indicated this was done to minimize interferences. Because the method guidance is not mandatory and other quality control indicators demonstrate the analyses were in control, in the professional judgment of the validator, no data qualification was necessary

XII.) Compound Identification:

Compound Identification criteria were met. No action was required.

HEXAVALENT CHROMIUM

SUMMARY

I.) General:

The analyses for hexavalent chromium were performed using ion chromatography according to EPA Method 7196A.

All laboratory data were acceptable with qualification.

MAJOR ISSUES:

There were no Major Problems with this fraction of the SDG.

MINOR ISSUES:

I.) Holding Times:

All Holding Time criteria were met. No action was required.

II.) Calibration:

All Initial and Continuing Calibration criteria were met. No action was required.

III.) Blanks:

There were no detections reported in the blanks associated with this data set. No action was required.

IV.) Laboratory Control Samples (LCS):

All LCS Recovery criteria were met. No action was necessary.

V.) Duplicate Sample Analysis:

MD analysis was performed on a client sample from a separate SDG. All duplicate criteria were met and no action was taken.

VI.) Matrix Spike / Matrix Spike Duplicate (MS/MSD):

MS / MSD analyses were performed on a client sample from a separate SDG. The Percent Recoveries (%Rs) were 0% for both samples, which were below the 75-125% QC limits. A Post digestion spike was analyzed with all criteria met. The non-detect result for hexavalent chromium in the SDG sample was qualified as estimated (UJ).

VII.) Field Duplicates:

There were no field duplicates associated with this SDG. No action was required.

VIII.) Sample Result, Calculation/Transcription Verification:

All criteria were met. No action was required.

FLUORIDE

SUMMARY

I.) General:

The analyses for fluoride were performed by ion chromatography according to SW 846 Method 9056.

It was noted by the validator that the Form I for this fraction incorrectly lists the extraction date for all SDG samples as 11/1/11. Upon verification of the raw data, the validator determined that the correct extraction date was 10/31/11 and lined through the incorrect date and made a notation documenting the correct extraction date.

All laboratory data were acceptable with qualifications.

MAJOR ISSUES

There were no major problems for this fraction of the SDG.

MINOR ISSUES

I.) Holding Times:

All Holding Time criteria were met. No action was required.

II.) Calibration:

All Calibration criteria were met. No action was required.

III.) Blanks:

There were no detections in the blanks associated with this SDG. No action was required.

IV.) Laboratory Control Samples (LCS):

All LCS Recovery and LCSD duplicate precision criteria were met. No action was necessary.

V.) Duplicate Sample Analysis:

MD analyses data were not submitted for this fraction of the SDG. All positive and non-detect sample results were flagged as estimated (J) and (UJ).

VI.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analyses data were not submitted for this fraction of the SDG. All positive and non-detect sample results were flagged as estimated (J) and (UJ).

VII.) Field Duplicates:

There were no field duplicates associated with this SDG. No action was required.

VIII.) Sample Result, Calculation/Transcription Verification:

All criteria were met. No action was required.

NITRITE

SUMMARY

I.) General:

The analyses for nitrite were performed by ion chromatography according to EPA Method 353.2.

All laboratory data were acceptable with qualifications.

MAJOR ISSUES

There were no major problems for this fraction of the SDG.

MINOR ISSUES

I.) Holding Times:

The 50 hours between sample collection and sample extraction for the SDG sample exceeded the 48 hour QC limit. The non-detect result for this sample, after qualification based on method blank contamination, was flagged as estimated (UJ).

II.) Calibration:

All Calibration criteria were met. No action was required.

III.) Blanks:

Nitrite was detected at 0.13 mg/kg in method blank K1110227-MB1. The result for nitrite in the

SDG sample, which was less than the CRQL, was flagged as undetected (U) with the result being raised to the CRQL.

IV.) Laboratory Control Samples (LCS):

All LCS Recovery and LCSD duplicate precision criteria were met. No action was necessary.

V.) Duplicate Sample Analysis:

MD analyses were performed on SDG sample CZBS0054S005. All Duplicate Sample Analysis criteria were met. No action was required.

VI.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS analysis data was not submitted for this fraction of the SDG. All positive and non-detect results for this fraction of the SDG were flagged as estimated (J) and (UJ).

VII.) Field Duplicates:

There were no field duplicates associated with this SDG. No action was required.

VIII.) Sample Result, Calculation/Transcription Verification:

All criteria were met. No action was required.

NITRATE + NITRITE

SUMMARY

I.) General:

The analyses for nitrate + nitrite were performed by ion chromatography according to EPA Method 353.2.

All laboratory data were acceptable without qualifications.

MAJOR ISSUES

There were no major problems for this fraction of the SDG.

MINOR ISSUES

I.) Holding Times:

All Holding Time criteria were met. No action was required.

II.) Calibration:

All Calibration criteria were met. No action was required.

III.) Blanks:

There were no detections in the blank associated with this fraction of the SDG. No action was required.

IV.) Laboratory Control Samples (LCS):

All LCS Recovery and LCSD duplicate precision criteria were met. No action was necessary.

V.) Duplicate Sample Analysis:

MD analyses were performed on SDG sample CZBS0054S005. All Duplicate Sample Analysis criteria were met. No action was required.

VI.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS analysis was performed on SDG sample CZBS0054S005. All MS criteria were met. No action was required.

VII.) Field Duplicates:

There were no field duplicates associated with this SDG. No action was required.

VIII.) Sample Result, Calculation/Transcription Verification:

All criteria were met. No action was required.

NITRATE

SUMMARY

I.) General:

The analyses for nitrate were performed by ion chromatography according to EPA Method 353.2.

All laboratory data were acceptable with qualifications.

The results for nitrate were reported by subtracting the nitrite results from the nitrate +nitrite results generated by the laboratory. The calculations were verified by the validator as correct. Since the nitrite analysis result was qualified as undetected based on method blank contamination, the result for nitrate was corrected by the validator to account for this. It was also determined by the validator that the result for nitrate should be qualified as estimated (J), since the result for nitrite was qualified based on holding time criteria as well.

CYANIDE

SUMMARY

I.) General:

The analyses for cyanide were performed according to EPA Method 9012A.

All laboratory data were acceptable with qualifications.

MAJOR ISSUES

There were no major problems for this fraction of the SDG.

MINOR ISSUES

I.) Holding Times:

All Holding Time criteria were met. No action was required.

II.) Calibration:

All Calibration criteria were met. No action was required.

III.) Blanks:

There were no detections in the blanks associated with this SDG. No action was required.

IV.) Laboratory Control Samples (LCS):

One LCS was analyzed for this fraction of the SDG. All LCS criteria were met. No action was necessary.

V.) Duplicate Sample Analysis:

Batch MD analyses were submitted for this fraction of the SDG. All criteria were met, but the sample could not be identified as a client matrix and the data was not considered meaningful. Based on the absence of relevant MD data, the positive result for cyanide in the SDG sample was flagged as estimated (J).

VI.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

Batch MS / MSD data was submitted for this fraction of the SDG. All Percent Recovery (%R) criteria were met, but the Relative Percent Difference (RPD) was 42%, which exceeded the 35% QC limit. Since the sample could not be indentified as a client matrix, the data was not considered meaningful. Based on the absence of relevant MS / MSD data, the positive result for cyanide in the SDG sample was flagged as estimated (J).

VII.) Field Duplicates:

There were no field duplicates associated with this SDG. No action was required.

VIII.) Sample Result, Calculation/Transcription Verification:

All criteria were met. No action was required.